

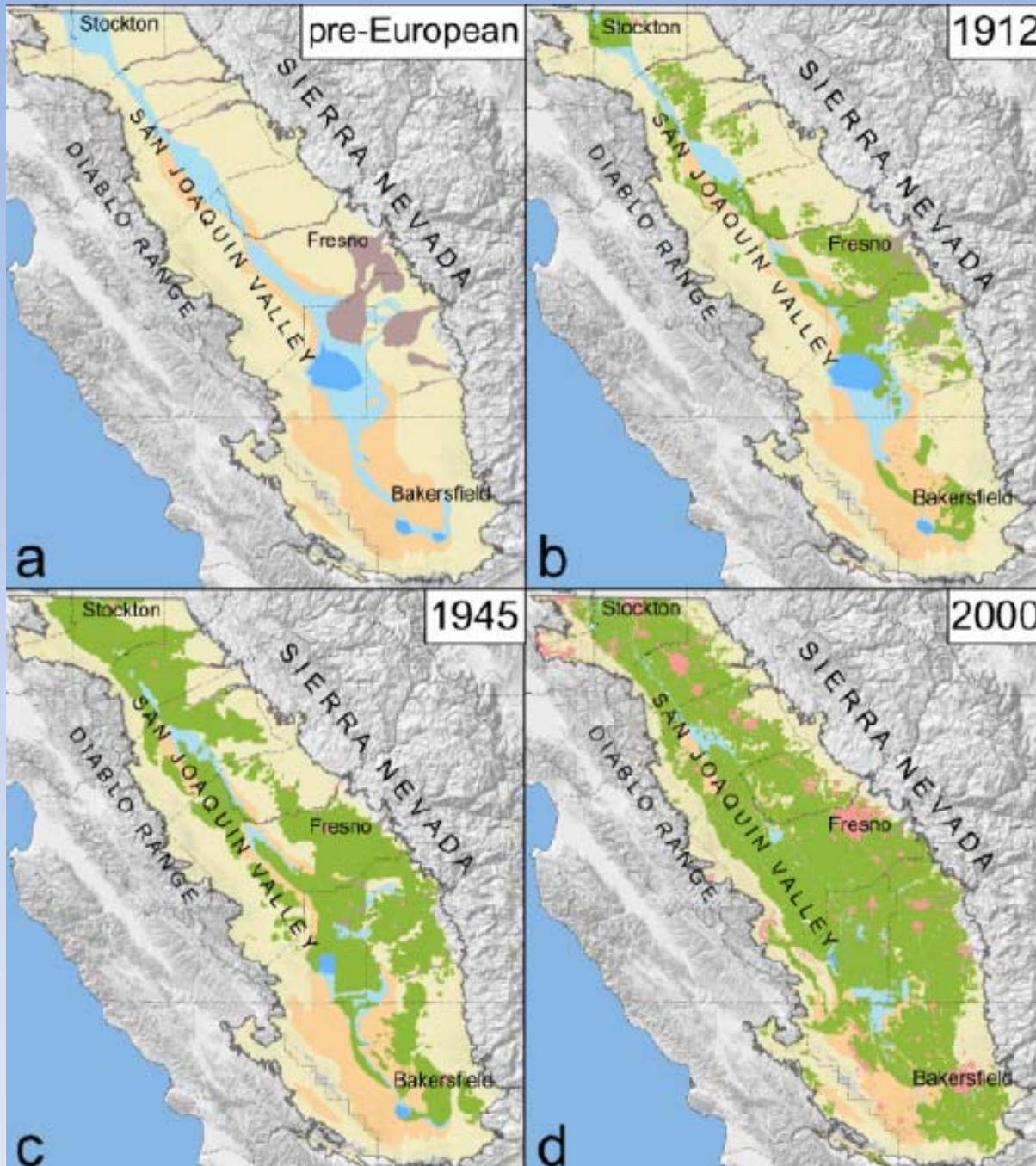
# California Wildlife Action Plan



## Central Valley Focus

# Major Stressors on Wildlife

- Growth and development
- Water management conflicts
- Water quality impairments
- Invasive species
- Climate change

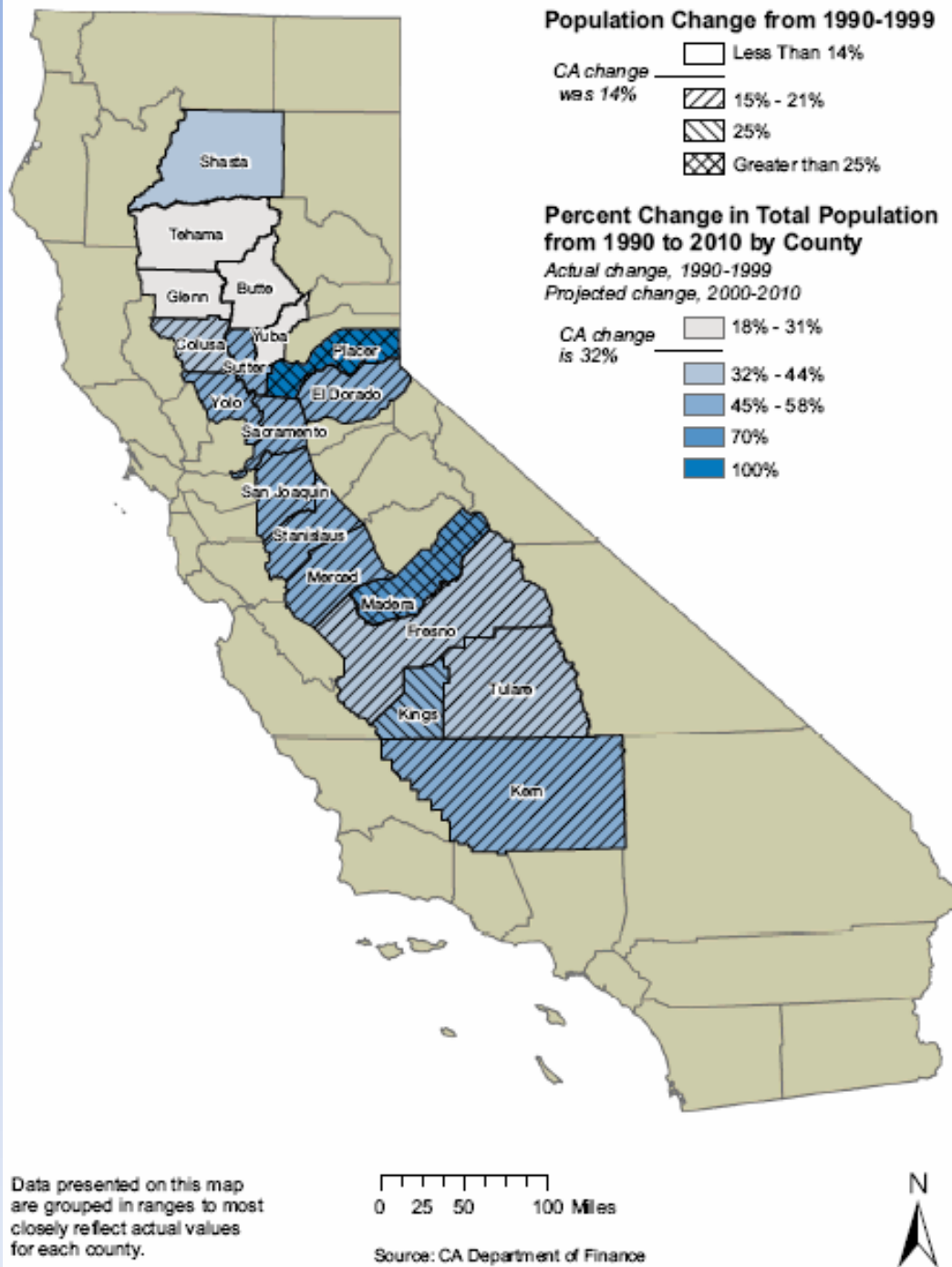


Growth and  
development

Historical  
changes in  
San Joaquin  
Valley

Growth  
rate  
exceeds  
statewide  
averages

Fifteen of the top 20  
fastest growing  
counties



# Significant habitat loss

- 99.9 % of historic native grasslands
- 99 % of valley oak savanna
- 95 % of wetlands
- 89 % of riparian woodland
- 67 % of San Joaquin Valley shrublands
- 66 % of vernal pools



# Secondary stressors from growth and development

- Habitat fragmentation
- Loss of movement routes and connectivity
  - Roads and canals - mammals, reptiles, amphibians
  - Wind turbines, power lines – birds, bats
- Invasive species, human disturbance

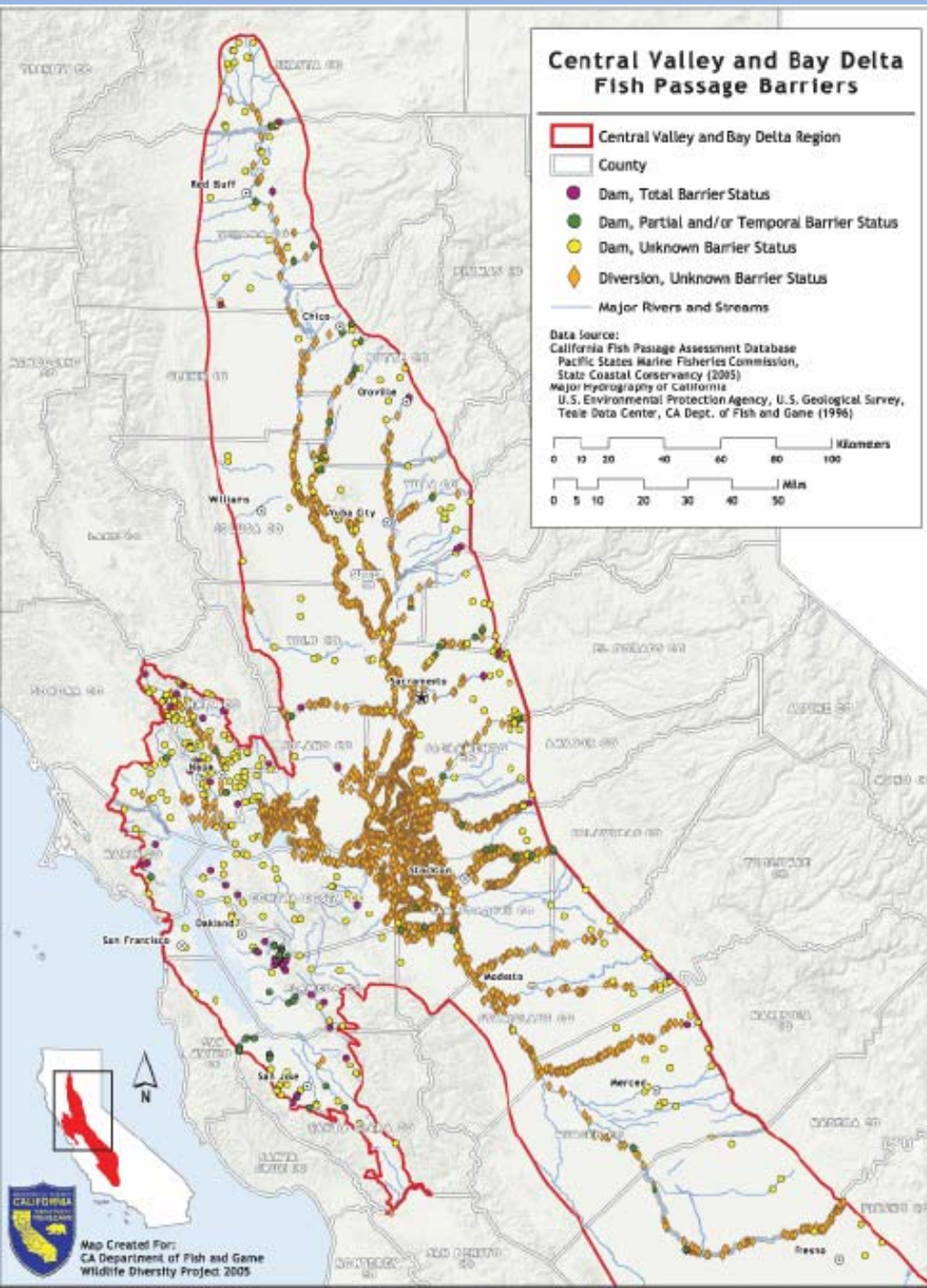
# Water management conflicts

- Diversions and dams
  - 70% of water naturally entering SF Bay is diverted
- Flood control
  - Structures along more than 2,600 miles of rivers and waterways

# Water management stressors on wildlife

- **Changed flood regimes**
  - loss of natural floodplains & riparian habitat
  - loss of coarse gravel supplies for fish spawning
- **Increased fish kill**
  - rapid changes in flow rates
  - entrainment and entrapment in screens and pumps
- **Inadequate water supply for wildlife**
- **Impaired water quality**
  - saltwater intrusion into estuaries
  - agric drainage and salinity/oxygen depletion
- **Fish passage upstream blocked**





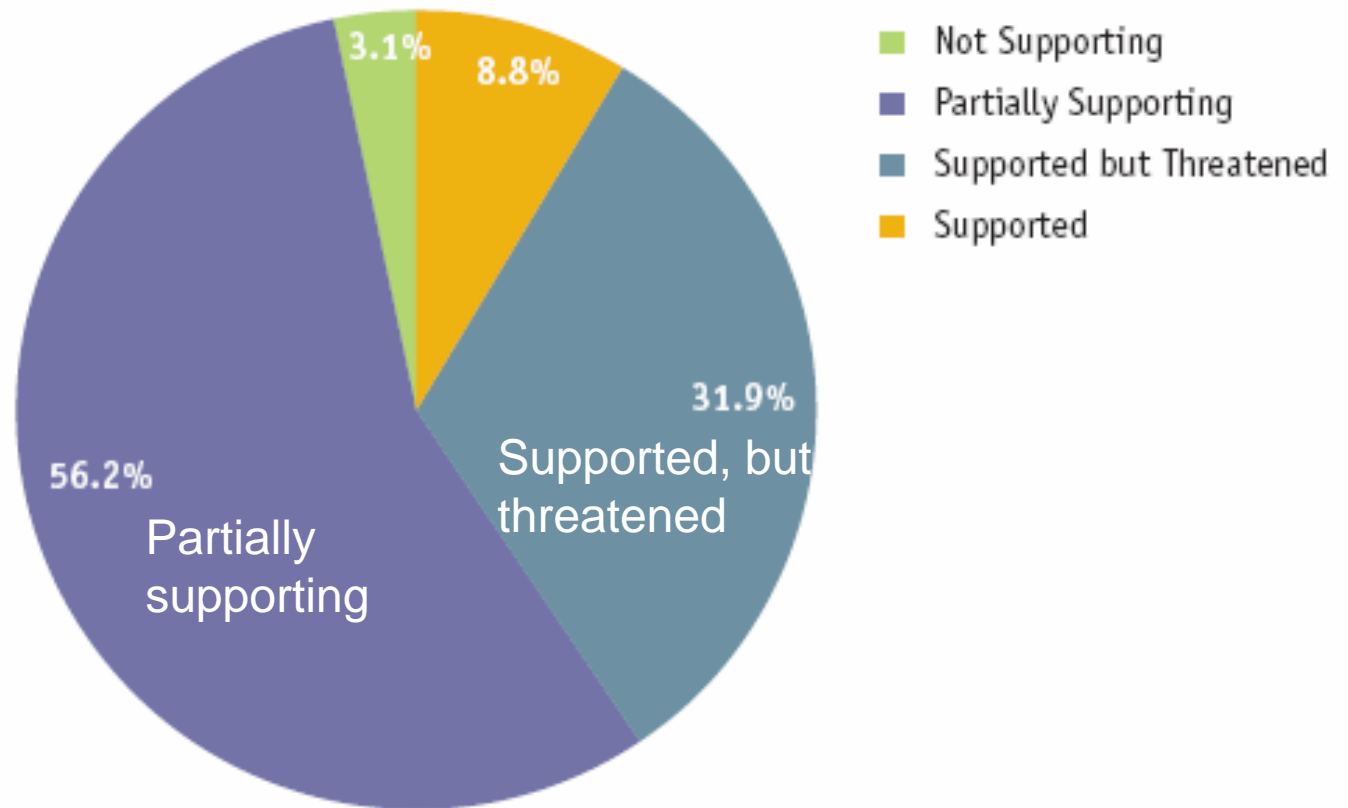
Obstacles to  
upstream  
movement

Central Valley fish  
passage barriers

# Impaired water quality

- Up to 40,000 tons of contaminants enter the SF Bay annually
- **Inorganic compounds**
  - heavy metals, phosphates, and nitrates
  - from municipal wastewater, industrial effluent, agricultural and mine drainage, and urban runoff
- **Organic compounds**
  - polychlorinated biphenyls (PCBs), pesticides, fertilizers, and detergents
  - from urban and agricultural runoff
- **Biological contaminants**
  - viruses and bacteria
  - from sewage, farm, dairy, feedlot and urban runoff

# Percent of Assessed Rivers and Streams Supporting Aquatic Life in the Central Valley 2002



Source: State Water Resources Control Board

# Invasive species - Plants

- Out-compete native plants for soil, water, and light
- Alter fire regimes
- Choke waterways
- Degrade or eliminate habitat for native animals



Giant reed  
*Arundo donax*  
Photo by A. Murray  
Copyright 2001 Univ. Florida

# Invasive species - Animals

- 64 new terrestrial animal species
- 51 new fish species
- Invertebrates
  - quagga and zebra mussels
  - Chinese mitten crab
  - mysid shrimp





# Invasive animals - stresses on wildlife

- Out-compete native species for food or space,
- Increased predation on native species
- Change the structure of aquatic habitats
  - increased turbidity by their behaviors
  - Clogging waterways and substrates

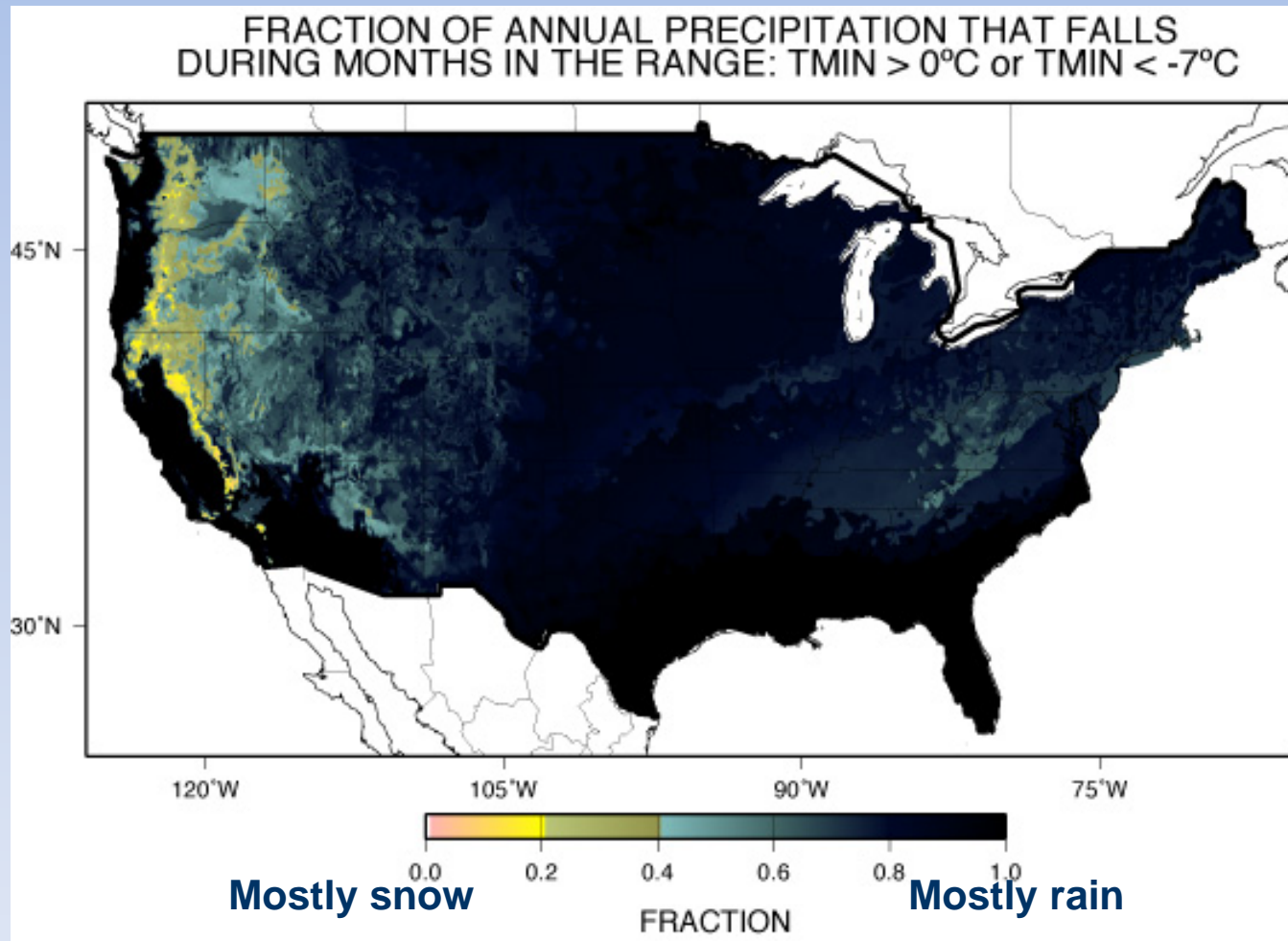
# Climate change

- Already happening in California
- Two major effects in Central Valley
  - Decreased water storage as snowpack
  - Rising sea levels



# Snowpack

## Most of Calif precipitation is snow



***“Rain vs Snow”***

Derived from OSU's PRISM monthly mean climatologies, 1971-

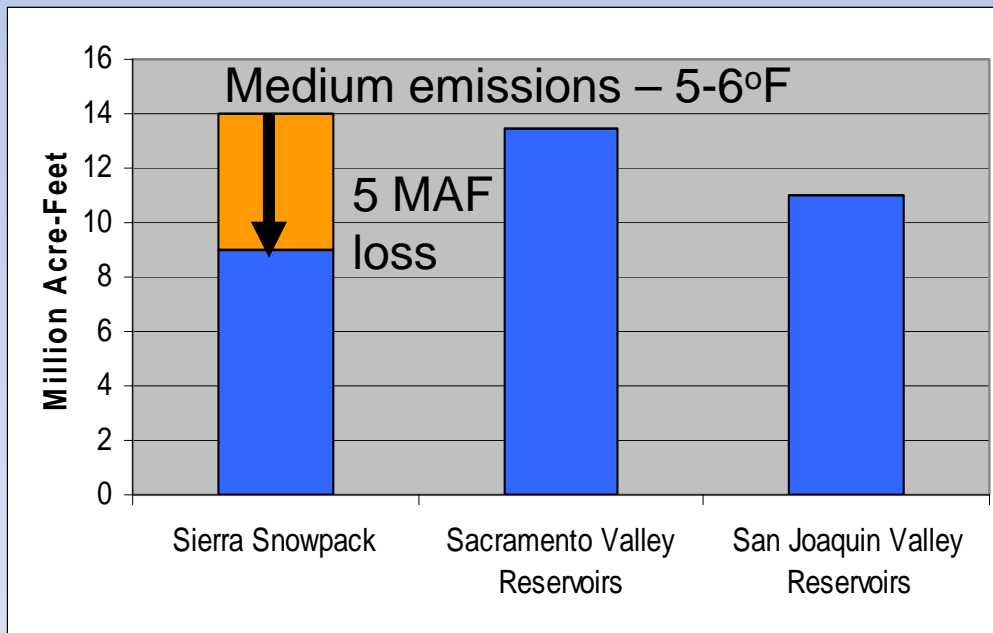
# Snowpack

## Expect more winter flooding



# Snowpack

## Expect more summer drought

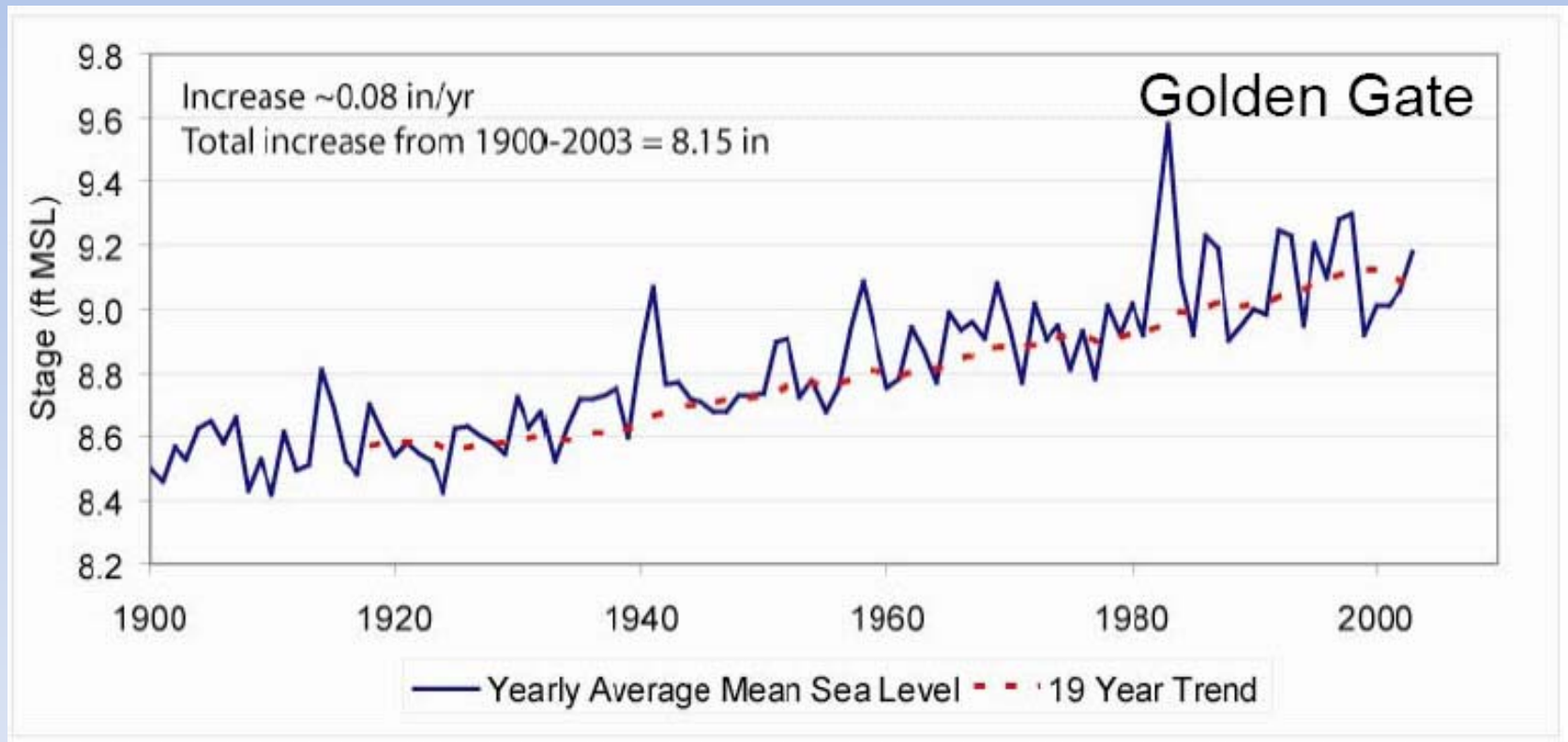


# Other impacts

- Increased riparian erosion
- Calls for more water storage and flood control
- Less water for species and water-dependent habitats (rivers, wetlands)

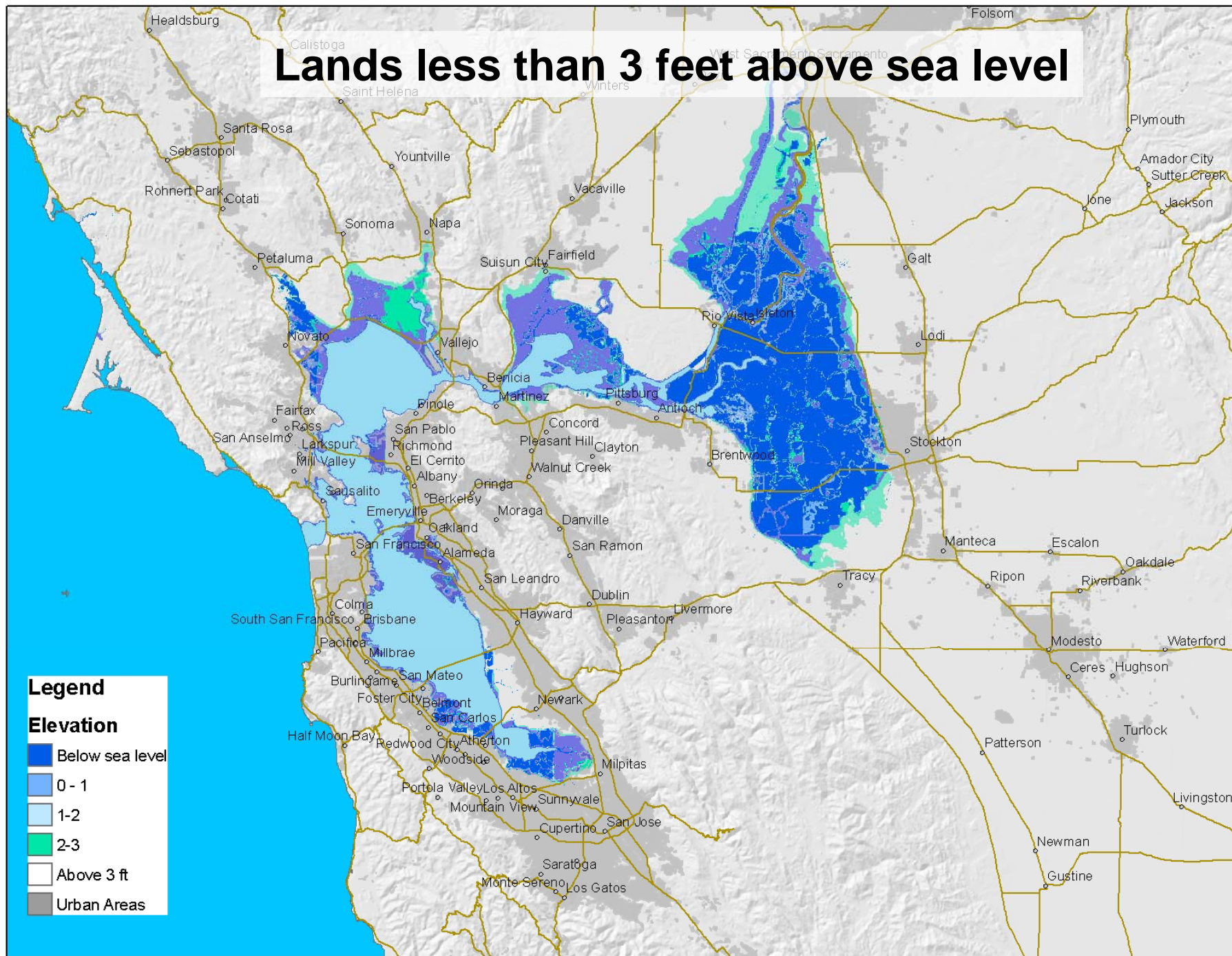
# Sea level is already rising

**More than 8" rise at Golden Gate in last 100 years**





# Lands less than 3 feet above sea level



# Impacts from rising sea-level

- Permanent marine flooding of low-lying areas
- Much less freshwater in Delta area
- Calls for alternative Delta water transfer
- Upslope migration of coastal urban areas



# Ecological responses to climate change

- Earlier spring events (phenology)
- Species shifting to cooler areas
- Habitat type shifts
  - Changes in amount and distribution
- Different responses by different species

# Sierra small mammals Early 1900's and today

**2000 feet**  
5 high-elev  
species

**1700 feet**  
4 low-elev  
species

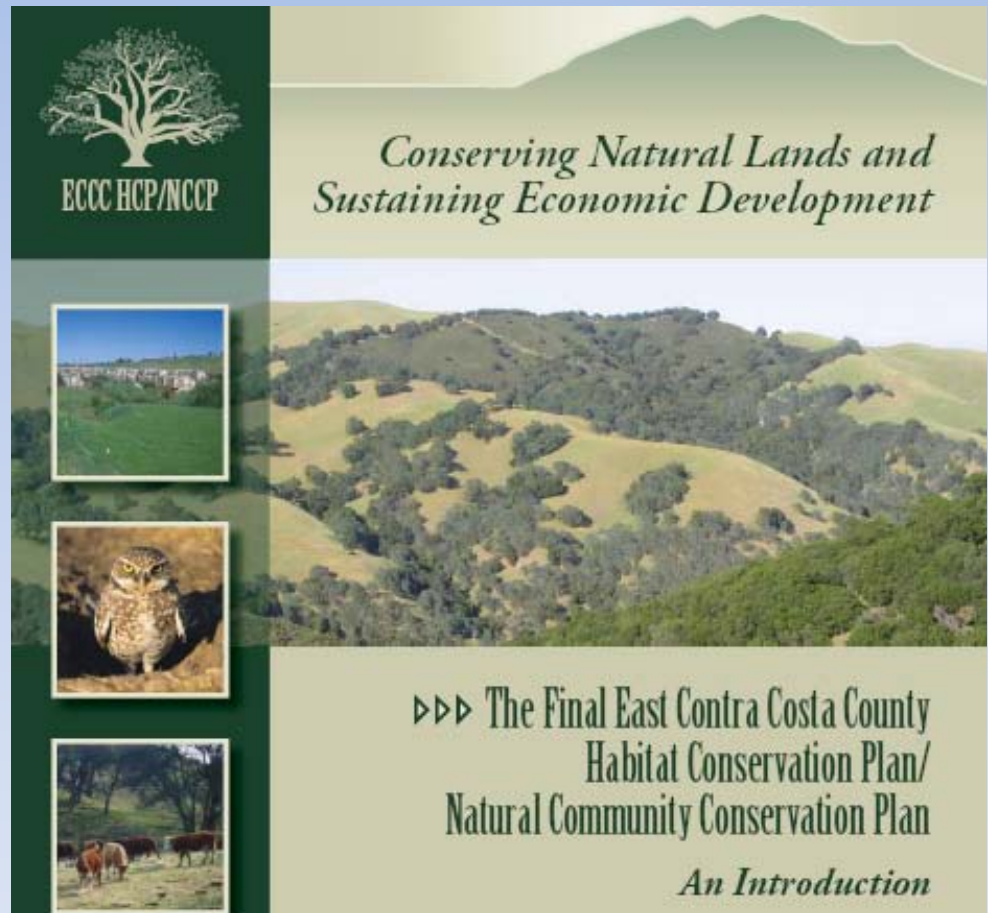
**3800 feet**  
2 high-elev  
species

# Recommended actions to conserve wildlife

- Integrated land planning
- Protect and restore sensitive habitats and linkages
- Integrated water planning
  - water quantity, flow, quality
- Improve fish passage
- Factor in climate change
- Control invasive species
- Assist private landowners

# Integrated land planning

- Work with local government to protect sensitive habitats, linkages

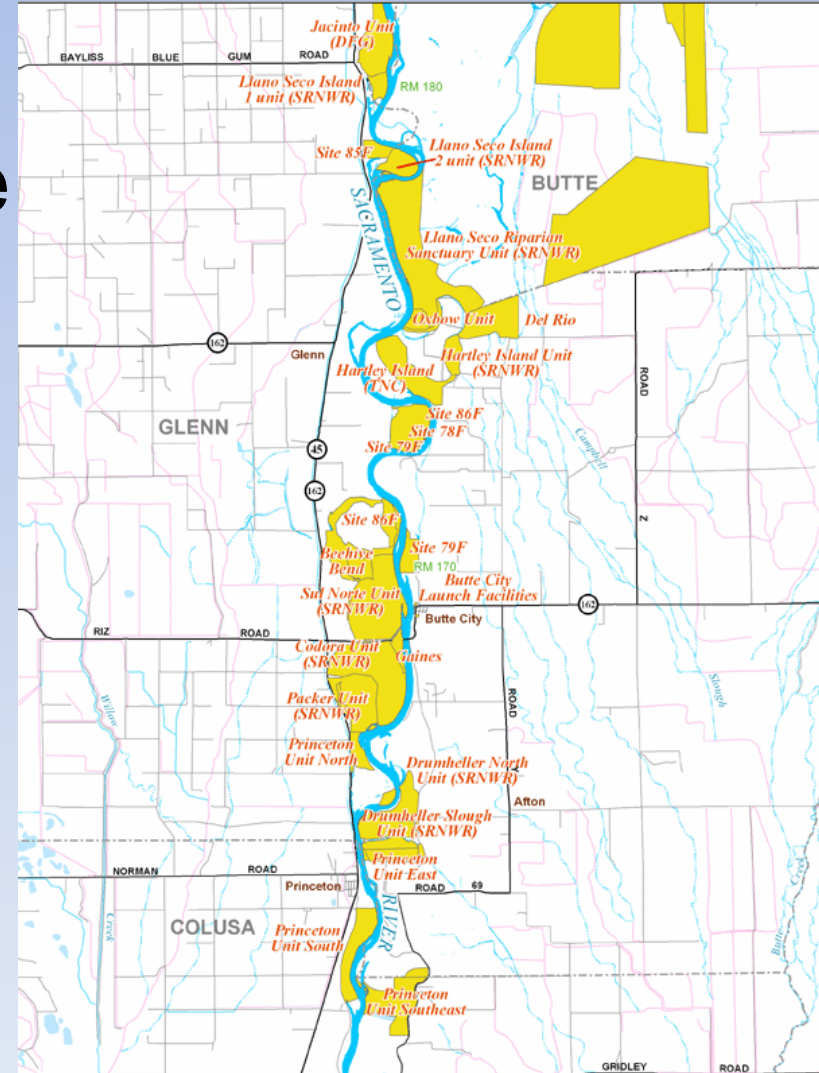


# Integrated land planning

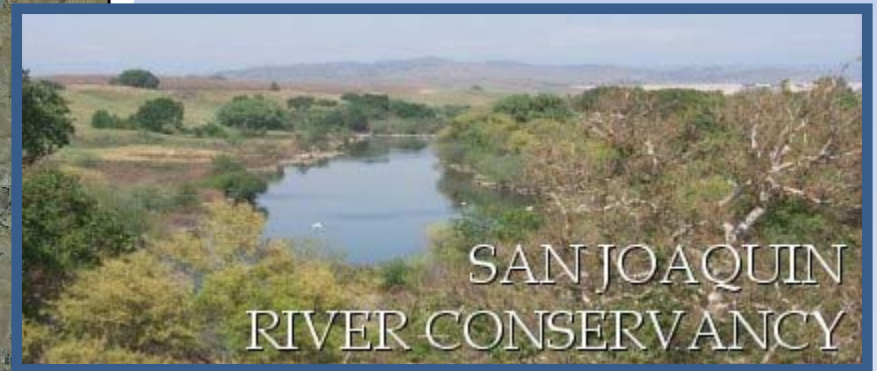
- Integrate wildlife conservation planning with land use and transportation planning
  - San Joaquin Valley Blueprint Planning Process
- Develop multicounty regional habitat conservation and restoration plans
  - Central Valley Joint Venture
  - Delta Regional Ecosystem Restoration Implementation Plan
  - Northern California Conservation Planning Partners



- Habitat connectivity along major rivers in the Central Valley



- Water dependent habitats (including wetland, riparian, and estuarine)



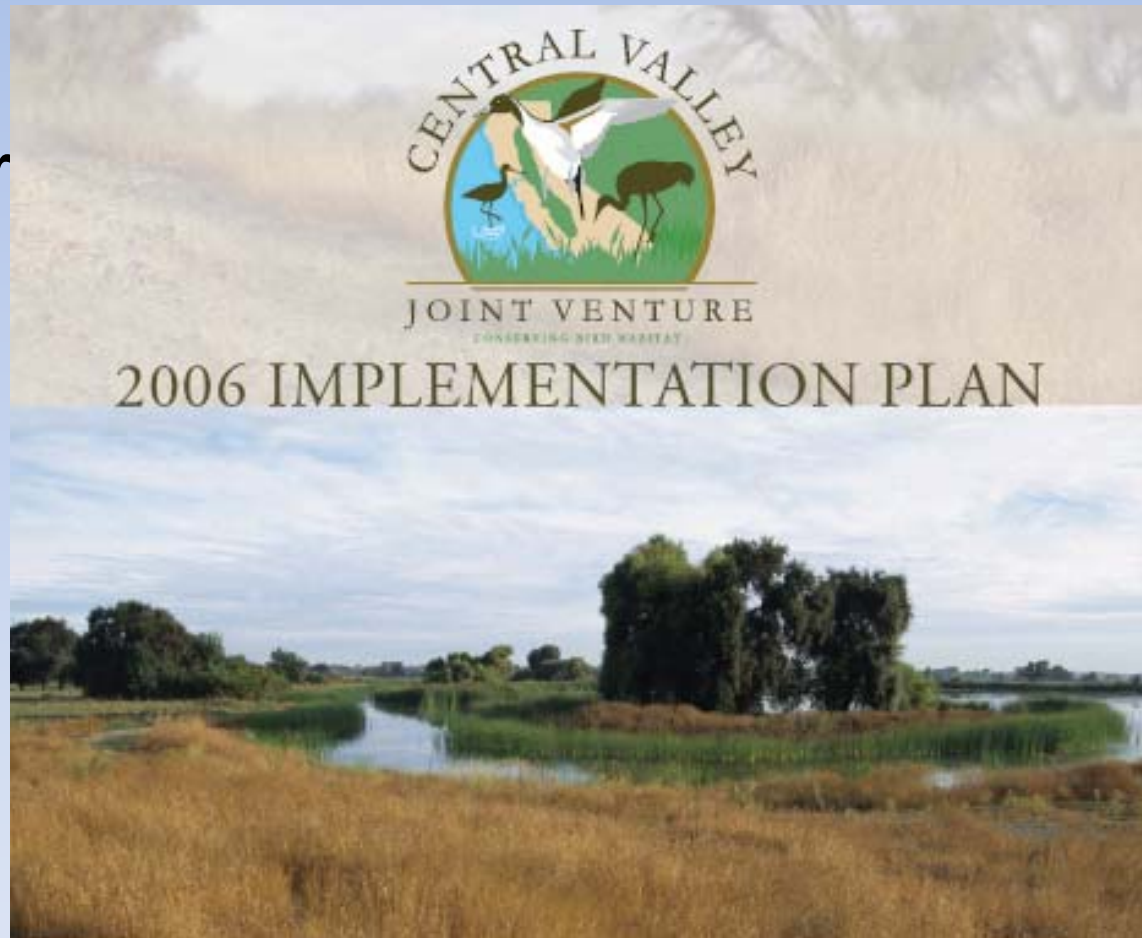


# Protect/restore sensitive habitats and linkages

- Upland linkages among protected areas in the San Joaquin Valley
  - Tulare Basin Wildlife Partners presentation
- Continue improving wildlife habitat for a variety of species on public lands

# Integrated water planning

- Allocate sufficient water for wildlife



# Integrated water planning

- Restore gravel supply in sediment-starved rivers

Goodwin Dam, Stanislaus River



Adding spawning gravel to the Stanislaus River



# Integrated water planning

- Improve and maintain water quality in the major river systems



**Problem:** Storm water runoff from agricultural fields washing pesticides into streams

## **Solution:**

- ✓Vegetated drainage ditches
- ✓Remove 38% – 98% of pesticides in drainage water





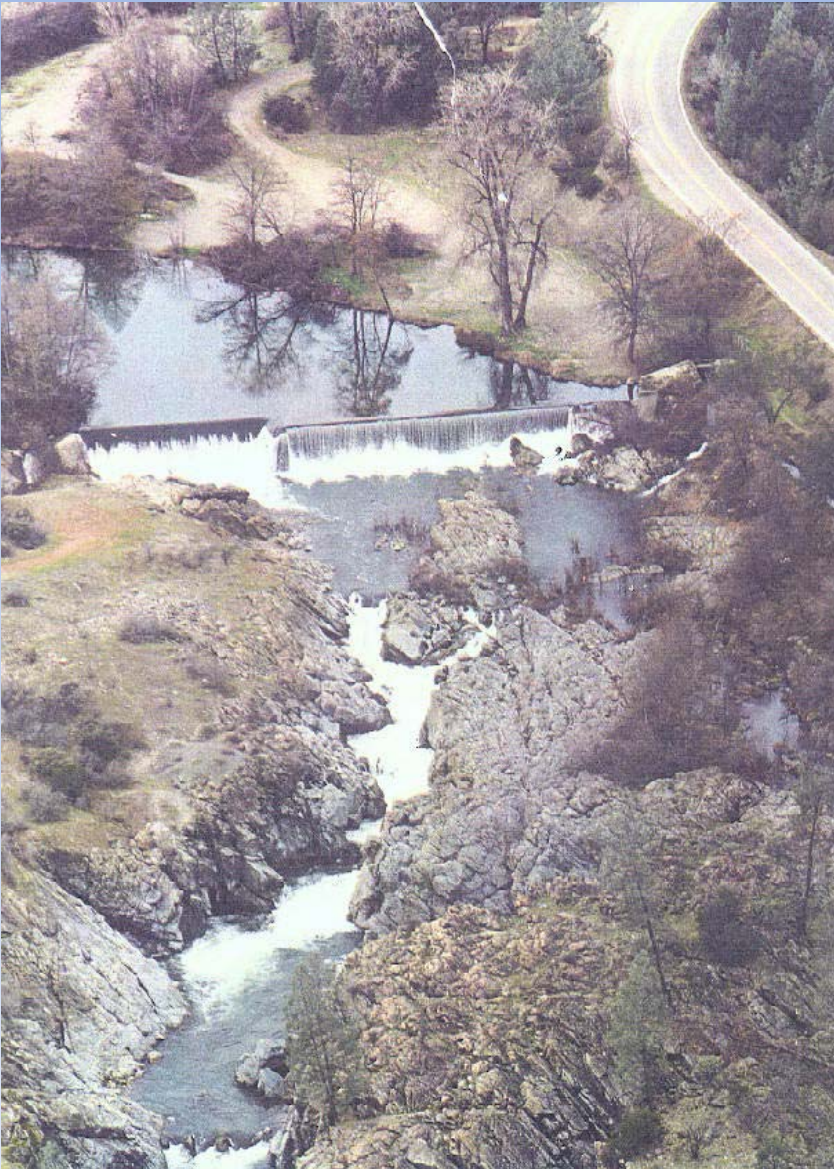
# Integrated water planning

- Re-establish and maintain more natural river flows, flooding patterns, water temperatures, and salinity conditions



Sacramento River Ecological Flows Study

# Improve fish passage



**Saeltzer Dam Removal  
on Clear Creek, Shasta  
County in 2000**

70% of spring-run  
Chinook are passing  
upstream



# Assist private landowners





# Matching Types of Assistance to Landowners Needs

## ***Types of private landowners***

- Land trusts
- Farmers and ranchers
  - small to large
- Residential owners
  - rural to urban
- Land or resource investors

## ***Challenges facing landowners***

- Little interest or incentive
- Little time, funding or knowledge
- Poor trust of government programs
- Complex regulatory environment
- Concern about increased regulatory burden

## ***Different types of assistance***

- |   |   |
|---|---|
| ▪ Basic information   | ▪ Market-based approaches   |
| ▪ Public recognition <ul style="list-style-type: none"><li>▪ awards, signage, press</li></ul>     | ▪ Conservation banking  |
| ▪ Technical assistance <ul style="list-style-type: none"><li>▪ regulatory, conservation</li></ul> | ▪ Financial <ul style="list-style-type: none"><li>▪ Tax benefits or credits, direct funding</li></ul> |